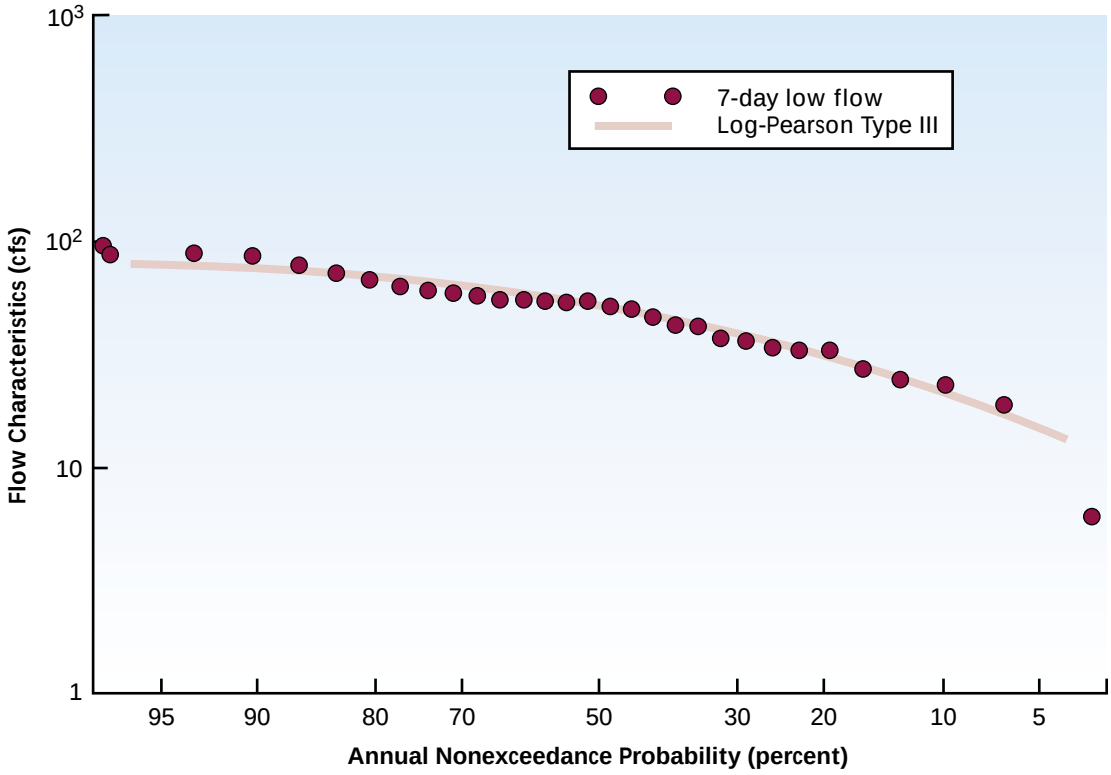

Figure 7.3: Annual minimum 7-day low flow frequency curve. *The $Q_{7,10}$ on this graph is about 20 cfs.*

not a universally accepted technique, although most river engineers and scientists agree that the concept has merit, at least for perennial (humid and temperate) and perhaps ephemeral (semiarid) rivers. For arid channels, where runoff is generated by localized high-intensity storms and the absence of vegetation ensures that the channel will adjust to each major flood event, the channel-forming discharge concept is generally not applicable.

Natural alluvial rivers experience a wide range of discharges and may adjust their geometry to flow events of different magnitudes by mobilizing either bed or bank sediments. Although Wolman and Miller (1960) noted that "it is logical to assume that the channel shape is affected by a range of flows rather than a single discharge," they concurred with the view put forward earlier by civil engineers working on "regime theory" that the channel-forming or dominant discharge is the steady flow that produces the same gross channel shapes and dimensions as the natural sequence of events (Inglis 1949). Wolman and Miller (1960) defined "moderate frequency" as events occurring "at least once each year or two and in many cases several or more times per year." They also considered the sediment load transported by a given flow as a percentage of the total amount of sediment carried by the river during the period of record. Their results, for a variety of American rivers located in different climatic and physiographic regions, showed that the greater part (that is, 50 percent or more) of the total sediment load was carried by moderate flows rather than catastrophic floods. Ninety percent of the load was carried by events with a return period of less than 5 years. The precise form of the cumulative curve actually depends on factors such as the